

# ADVANCING the INTEL® PENTIUM® PROCESSOR EXTREME EDITION DESKTOP PLATFORM

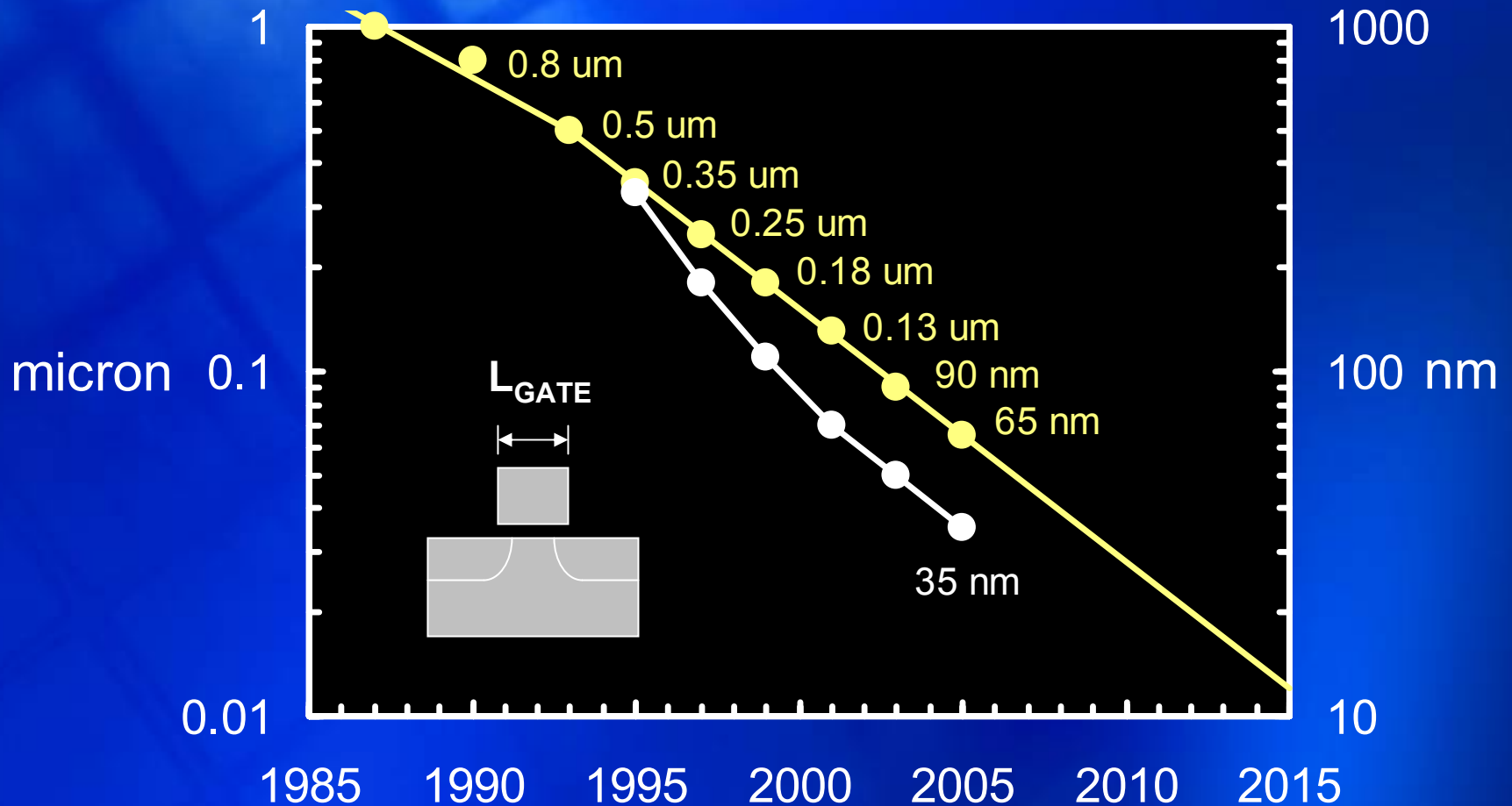
# Intel's Logic Technology Evolution

Process Name	<u>P1262</u>	<u>P1264</u>	<u>P1266</u>	<u>P1268</u>
Lithography	90nm	65nm	45nm	32nm
1 <sup>st</sup> Production	2003	2005	2007	2009

***Moore's Law continues!***

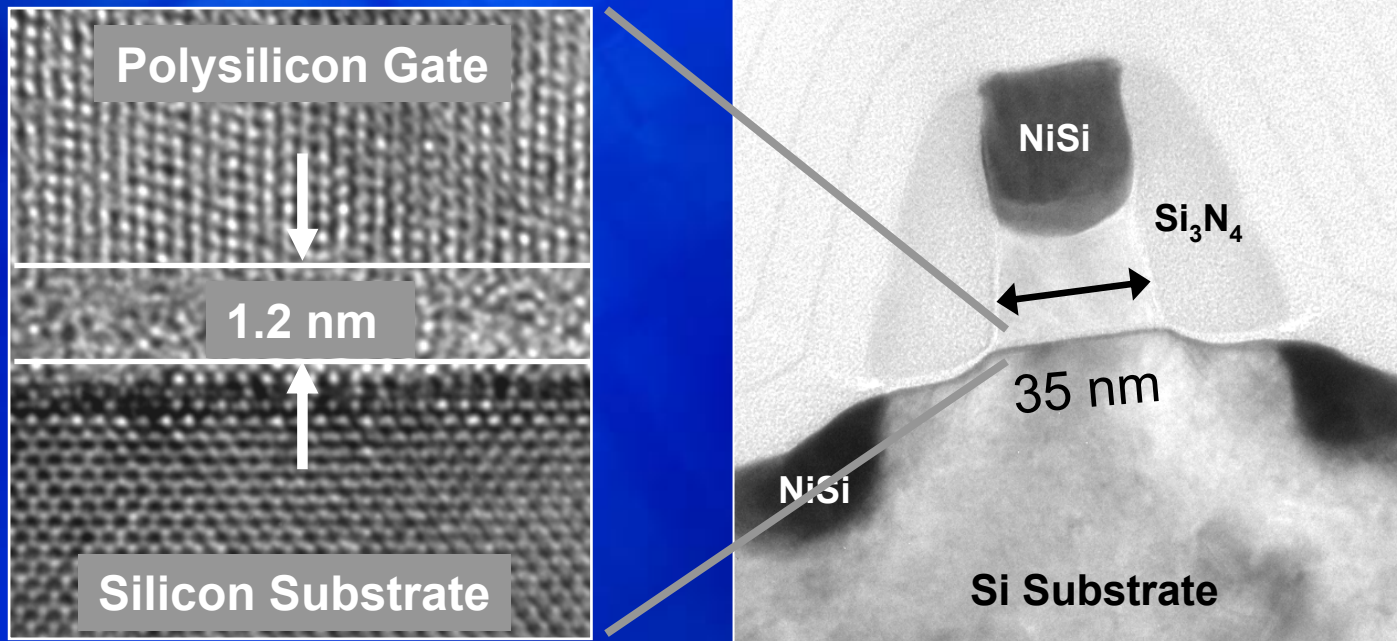
**Intel continues to introduce a new technology generation every 2 years**

# Feature Size Scaling



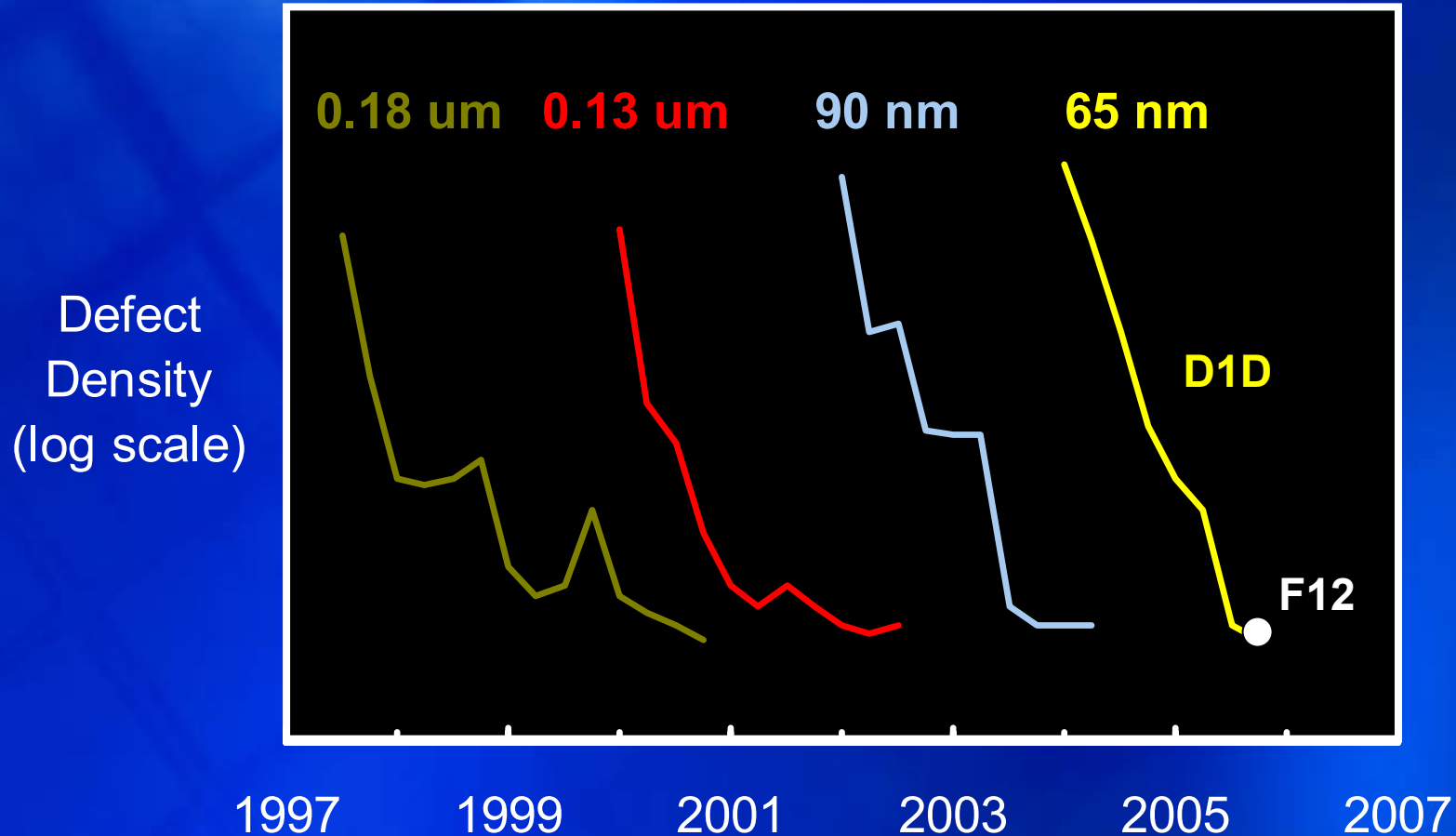
**Transistor gate length is smaller than other features for improved performance and reduced power**

# 65 nm Generation Transistors



**Leading edge transistor technology is  
unmatched by our competitors**

# Predictable World-Class Yield on 2 Year Cycles



***Copy Exactly!*** transfer methodology enables  
matched yield at new factory startup

# Intel's 2006 65nm Dual-Core Processors

1H'06

2H'06

SERVER



DESKTOP



MOBILE





# First 65nm Dual-core Platforms

Shipping  
Production



## Presler / Averill & Anchor Creek

Larger Cache

Higher Frequencies

376M Transistors

Faster FSB

## Yonah/Napa

2MB Smart Cache

151M Transistors

Faster FSB

Digital Media Boost

Dynamic Power Coordination

Shipping  
Production Q4



Shipping  
Seeds



## Dempsey/Bensley

Larger Cache

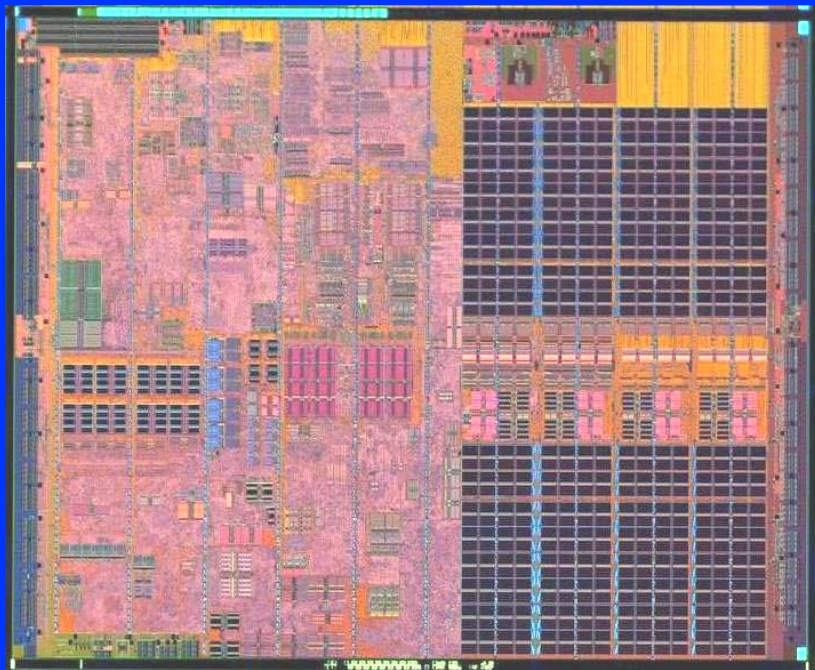
Higher Frequencies

376M Transistors

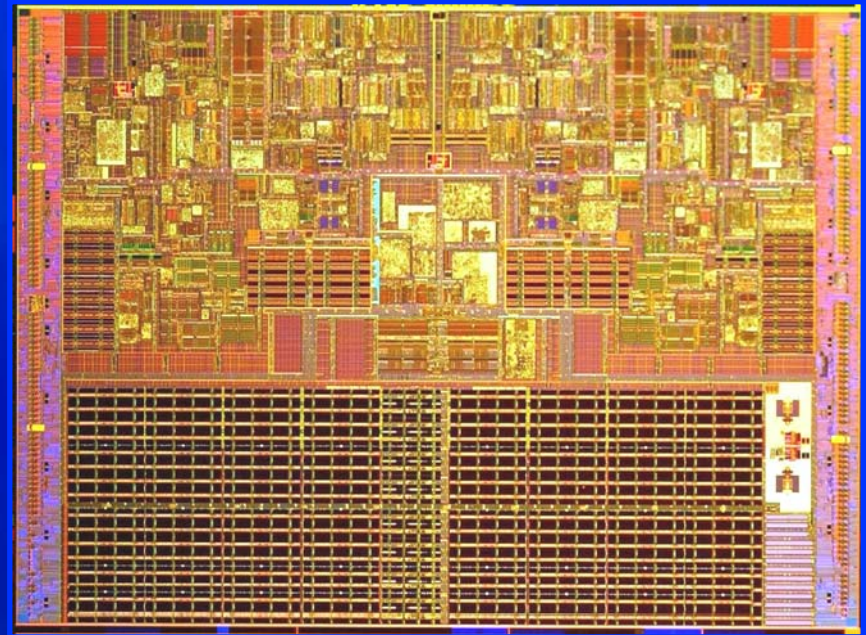
Faster FSB

New Bensley Platform

# 65 nm Microprocessors



Presler/Cedar Mill

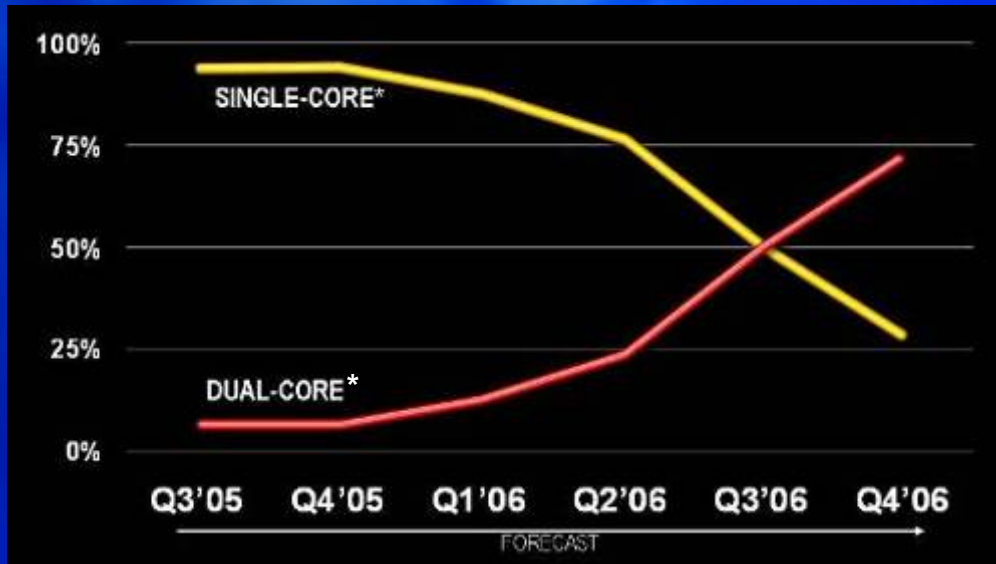


Yonah

**No other company has demonstrated this level of readiness on its 65 nm technology**



# Intel Multi-core Processor Ramp



**Rapid Dual-Core  
Ramp Enabled  
by 65nm/300mm**



	2005	2006**	2007**
<b>Desktop Performance*</b>	Shipping	>70%	>90%
<b>Mobile Performance*</b>	Shipping	>70%	>90%
<b>Server*</b>	Shipping	>85%	~100%

# Intel PLATFORM ....and Multi-core

Platform Strategies: Across All Segments & Driven by User Needs



DIGITAL HOME



DIGITAL ENTERPRISE



MOBILITY



DIGITAL HEALTH



CHANNEL

Battery Life/Power

Connectivity

Security

.....

Compute Capability

Manageability

Form Factor

**Intel Multi-core:** Platform element delivering tremendous growth in **Compute Capability**

- Building upon success of HT Technology
- Better **Multitasking Responsiveness**
- Improved **Multi-threading performance**

# Introducing...

The next evolution of the extreme desktop performance platform featuring:



Intel® Pentium® Processor  
Extreme Edition 955



Intel® 975X Express Chipset



Intel® Desktop Board  
D975XBX



# Intel® Pentium® Processor Extreme Edition Platform

## Ready for Intel® Viiv™ Technology-based EPCs



### Consumer Electronics (CE) Entertainment PC

*Enables digital enjoyment and content sharing*

- Content consumption
- 10' user interface
- CE form factor or custom design
- Family room or home theater



### All In One (AIO) Entertainment PC

*Fosters digital creativity, content enjoyment and sharing*

- Content Creation and Consumption
- 2' & 10' user interface
- Custom design with integrated display
- Family room or bedroom



### Lifestyle Entertainment PC

*Fosters digital creativity, content enjoyment and sharing*

- Content Creation and Consumption
- 2' & 10' user interface
- Mini tower or custom design
- Den, bedroom or kitchen



### Extreme Gaming & Media Entertainment PC

*Delivers better gaming and media experience*

- Optimized for competitive gaming
- Content Creation and Consumption
- 2' & 10' user interface
- Mini tower
- Den or bedroom



# Intel® Pentium® Processor Extreme Edition Platform



Extreme Gaming



Digital Video Editing



Digital Photo Editing



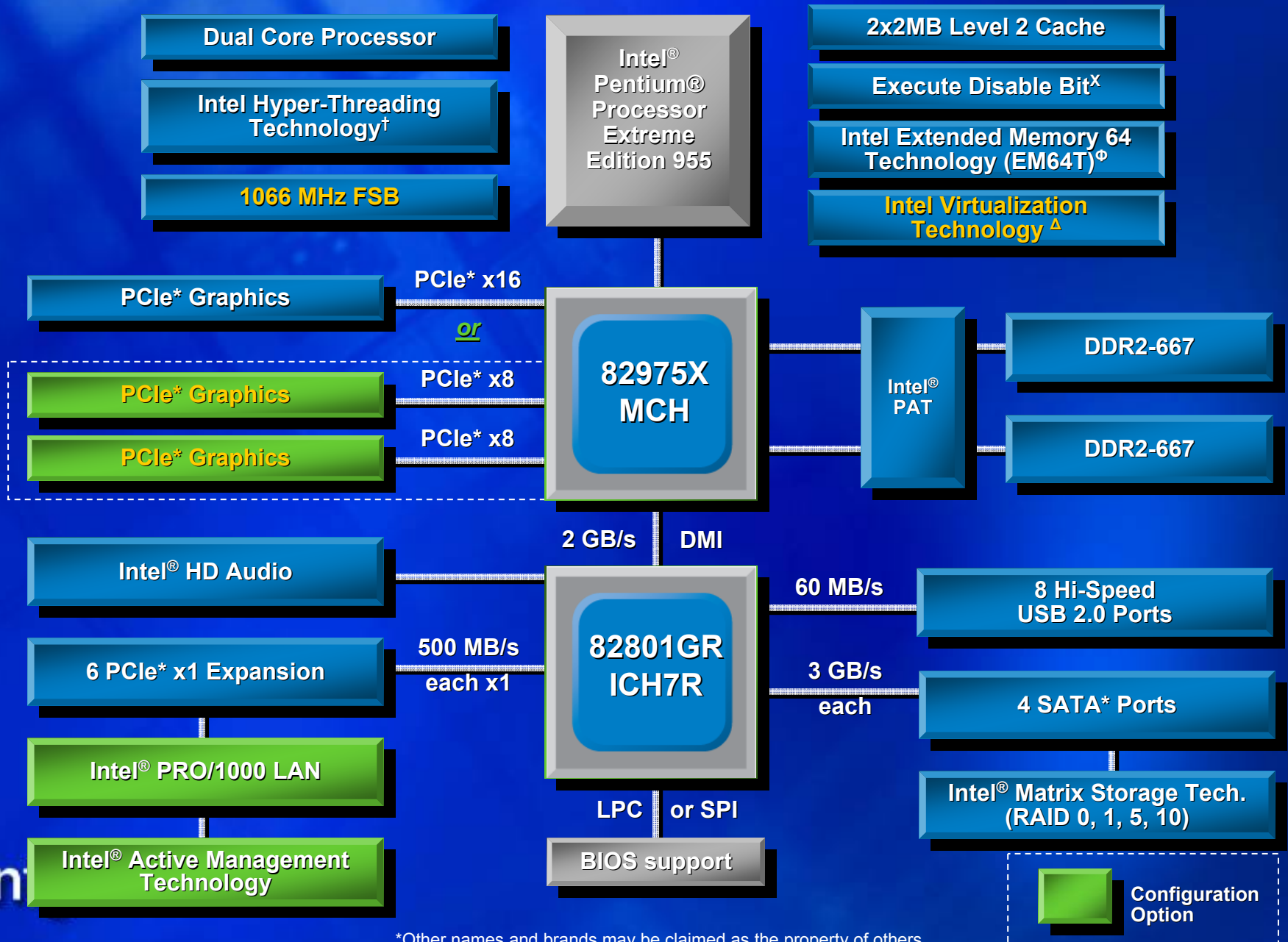
PVR



**Designed for advanced users seeking exceptional capabilities for:**

- Realistic, intense gaming experience
- Digital content creation
- Multiple usages across multiple users
- System flexibility for the technical enthusiast

# Intel® Pentium® Processor Extreme Edition Platform



\*Other names and brands may be claimed as the property of others

# Flexible I/O for Exceptional Graphics Performance

## What it is

- Multiple PCI Express\* controllers support a flexible I/O enabling dual x8 or single x16 graphics configurations for exceptional graphics performance.

## How it provides a Benefit

- Significantly improved graphics performance for gaming and multimedia applications by increasing video bandwidth processing power
- Allows users to play 3D games and create media at the highest available resolutions for realistic entertainment
- Provides headroom to easily run future applications requiring high video bandwidth processing power

## Requirements to support Flexible I/O operation

- Intel® 975X Express Chipset
- Two identical graphics cards of the same performance class
- Graphics Card driver support

# Platform Capabilities

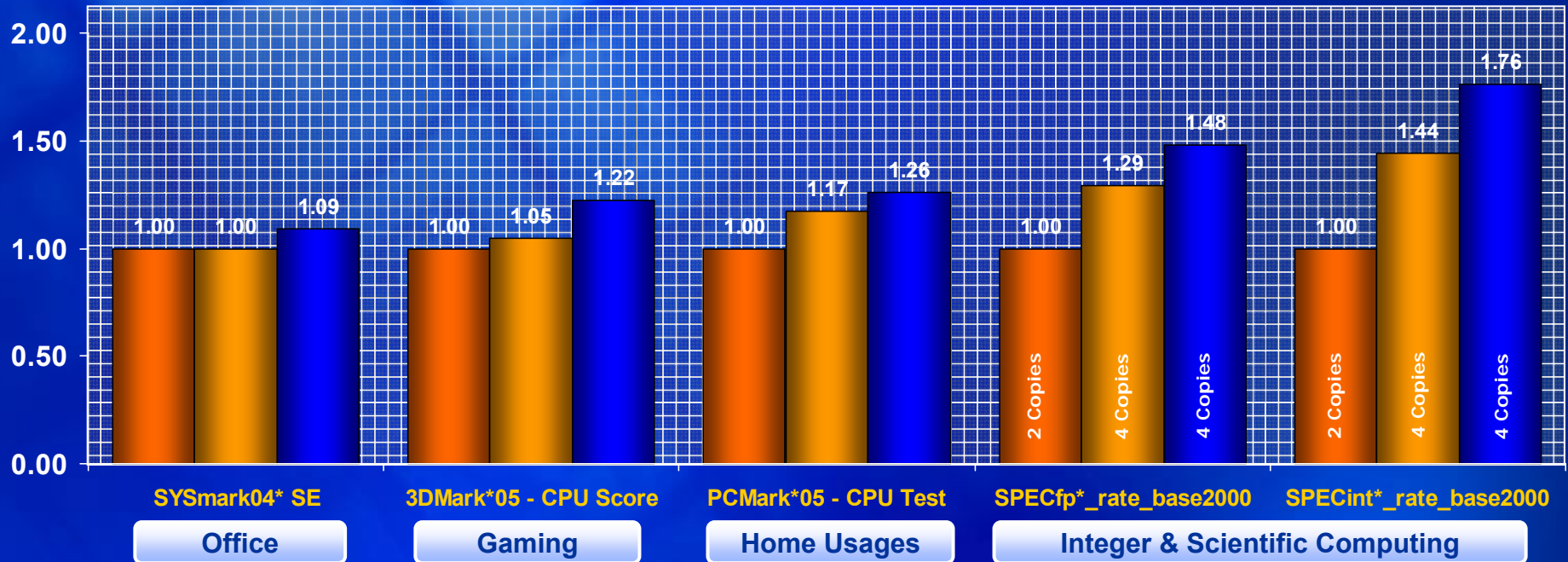
		Intel® Pentium® 4 Processor with HT Technology Extreme Edition 3.73 GHz and Intel® 955X Express Chipset	Intel® Pentium® Processor Extreme Edition 840 and Intel® 955X Express Chipset	Intel® Pentium® Processor Extreme Edition 955 and Intel® 975X Express Chipset
	<b>High End Rendering<sup>1</sup></b> <i>Use fewer systems to render a 2 hour animated movie in one work week</i>	~ 160 systems	~ 104 systems	~ 97 systems
	<b>HD Videography<sup>2</sup></b> <i>Spend less time to produce a 2 hour professional video</i>	34.2 hours	22.8 hours	21.0 hours
	<b>Digital Photos<sup>3</sup></b> <i>Save over an hour when editing 250 high resolution pictures for your album</i>	14.0 hours	12.3 hours	11.2 hours
	<b>Shows on the Go!<sup>4</sup></b> <i>Quickly convert 4 episodes of your favorite TV shows to PSP* format</i>	Baseline	48% faster	85% faster
	<b>Multitasking<sup>5</sup></b> <i>Watch a movie at &gt; 95% frame quality ...</i>	No	Yes	Yes
	<i>... while formatting video clips in the background</i>	2.9 clips / hour	3.7 clips / hour	4.0 clips / hour

Lower is better  
Lower is better  
Lower is better  
Higher is better  
Higher is better

**Run Description:** 1 – Two hour movie extrapolation based on Discreet® 3D Studio Max® 7.0 rendering one animated frame. Assume 30FPS and 50 hour work week. No other applications were running during the test. 2 – Two hour HD video extrapolation based on Adobe® Premiere® Pro 1.5 with Main Concept MPEG Pro Plugin 1.05 and Microsoft® Windows® Media Encoder 9.0 with Advanced Profile converting one 10 sec HDV MPEG2 into a compressed HD WMV. No other applications were running during the test. 3 – Calculation based on Adobe® Photoshop® CS2 filtering pictures ranging in size from 11.3 to 14.4MB with a resolution of 2592x1944. Then uses web gallery feature to automatically create a web page with thumbnails and photos. No other applications were running during the test. 4 – Calculation based on Playstation® Portable Video 9.0 application converting four identical 1 minute and 22 seconds files simultaneously from PC to PSP format. No other applications were running during the test. 5 – 14 minute video clip extrapolation based on Windows® Media® Video 9.0 with Advanced Profile converting 2 minutes and 1 second (416 MB) DV file to a WMV9 format, while playing 1minute 59 seconds HD mpeg2 video using Windows® Media® Player® 10. "Yes" denotes video playback achieved good quality by maintaining 24FPS or higher over 95% of the time and "No" denotes that it achieved 24FPS or higher below 95% of the time.



# Platform Performance

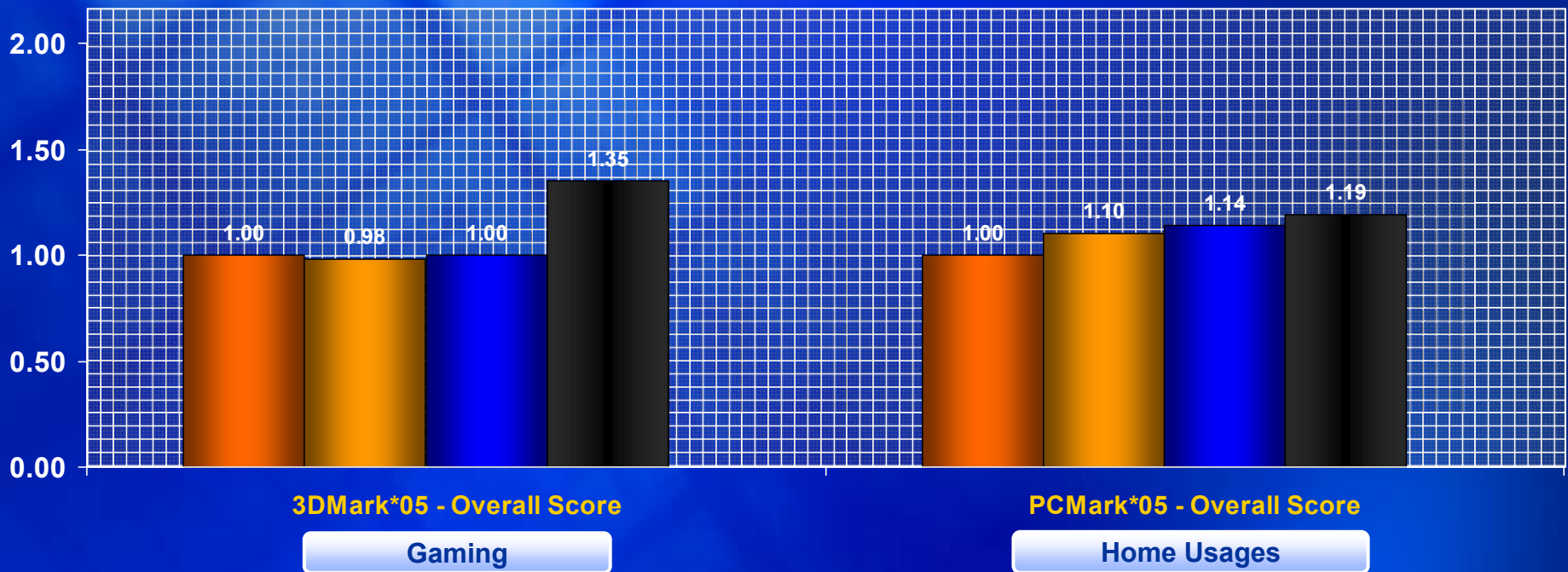


- Intel® Pentium® 4 Processor with HT Technology Extreme Edition 3.73 GHz (2MB L2 Cache, 1066 MHz FSB)
- Intel® Pentium® Processor Extreme Edition 840 (2x1MB L2 Cache, 3.20 GHz, 800 MHz FSB)
- Intel® Pentium® Processor Extreme Edition 955 (2x2MB L2 Cache, 3.46 GHz, 1066 MHz FSB)

**The Intel® Pentium® Processor Extreme Edition 955 increases performance over these previous platforms**

**Source:** Intel. First Platform: Intel® Pentium® Processor Extreme Edition 955 (2x2MB L2 Cache, 3.46 GHz, 1066 MHz FSB), Intel® 975X Extreme Chipset, D975XBA board. Second Platform: Intel® Pentium® Processor Extreme Edition 840 (2x1MB L2 Cache, 3.2 GHz, 800 MHz FSB), Intel® 955X Extreme Chipset, D955XBK board. Third Platform: Intel® Pentium® 4 Processor with HT Technology Extreme Edition 3.73 GHz (2MB L2 Cache, 1066 MHz FSB), Intel® 955X Extreme Chipset, D955XBK board. All Platforms: Intel® Chipset Software Installation file: 7.2.0.1006, Micron® 2x512MB DDR2 667 5-5-5-15, Maxtor® DiamondMax® 10 6B300S0 300GB NCQ Serial ATA (7200 RPM), ATI® Radeon® X850 XT PCIe, ATI® Catalyst® 5.10 Driver Suite, Windows® XP Professional Build 2600 SP2 NTFS, DirectX 9.0c. Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance.

# Graphics Performance



- Intel® Pentium® 4 Processor with HT Technology Extreme Edition 3.73 GHz (2MB L2 Cache, 1066 MHz FSB)
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- Intel® Pentium® Processor Extreme Edition 955 (2x2MB L2 Cache, 3.46 GHz, 1066 MHz FSB)
- Intel® Pentium® Processor Extreme Edition 955 (2x2MB L2 Cache, 3.46 GHz, 1066 MHz FSB) – Dual Graphics

**Dual graphics greatly boosts 3D gaming performance**

**Source:** Intel. First Platform: Intel® Pentium® Processor Extreme Edition 955 (2x2MB L2 Cache, 3.46 GHz, 1066 MHz FSB), Intel® 975X Extreme Chipset, D975XBA board and dual ATI® Radeon® X850 XT PCIe. Second Platform: Intel® Pentium® Processor Extreme Edition 955 (2x2MB L2 Cache, 3.46 GHz, 1066 MHz FSB), Intel® 975X Extreme Chipset, D975XBA board and single ATI® Radeon® X850 XT PCIe. Third Platform: Intel® Pentium® Processor Extreme Edition 840 (2x1MB L2 Cache, 3.2 GHz, 800 MHz FSB), Intel® 955X Extreme Chipset, D955XBK board, and single ATI® Radeon® X850 XT PCIe. Fourth Platform: Intel® Pentium® 4 Processor with HT Technology Extreme Edition 3.73 GHz (2MB L2 Cache, 1066 MHz FSB), Intel® 955X Extreme Chipset, D955XBK board, and single ATI® Radeon® X850 XT PCIe. All Platforms: Intel® Chipset Software Installation file: 7.2.0.1006, Micron® 2x512MB DDR2 667 5-5-5-15, Maxtor® DiamondMax® 10 6B300S0 300GB NCQ Serial ATA (7200 RPM, 16MB cache), ATI® Catalyst® 5.10 Driver Suite, Windows® XP Professional Build 2600 SP2 NTFS, DirectX 9.0c. Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design configuration may affect actual performance.

# Summary

## **The Intel® Pentium® Processor Extreme Edition Platform**

- features the Intel® Pentium® Processor Extreme Edition 955 on the Intel® Desktop Board D975XBX with the Intel® 975X Express Chipset**
- Delivers Flexible Performance for High-end gamers, Power Users, and Media Creation Enthusiasts**
- Will be available January 16, 2006**
  - Price, Performance, and availability under embargo until released by Intel (current plan: December 27, 2005 8 AM PST)**

**New levels of performance, features, and flexibility for high-end users**



\*Operating Intel processors outside of specifications can void the warranty of your equipment, create instability in your system, and/or shorten the lifespan of the processor and other devices.

# Backup



# Intel® Pentium® Processor Extreme Edition 955

Feature	Benefit
<b>Dual Core Processing</b>	<b>Provides two independent processor cores in one physical processor allowing the platform to do more in less time while you enjoy responsive interaction with your PC</b>
<b>Intel Hyper-Threading Technology†</b>	<b>Allows each core to function as two logical processors providing better data throughput when used with thread-enabled software</b>
<b>Intel Virtualization Technology△</b>	<b>Enables platforms to run multiple operating systems and/or applications in independent partitions or environments</b>
<b>2x2MB Level 2 Cache</b>	<b>Each processor core is equipped with its own 2MB Level 2 cache allowing the execution cores to quickly access data for processing</b>
<b>1066 MHz FSB</b>	<b>Delivers excellent system bandwidth for maximizing efficiency and improving system performance</b>
<b>Execute Disable Bit*</b>	<b>Offers improved protection against malicious "buffer overflow" attacks when properly enabled with a supporting operating system</b>
<b>Intel Extended Memory 64 Technology (EM64T)Φ</b>	<b>Enables platforms to access larger amounts of memory and will support developing 64-bit operating systems and applications</b>

† Intel® Hyper-Threading Technology (HT Technology) requires a computer system with an Intel® Processor supporting HT Technology and an HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use.

△ Intel® Virtualization Technology requires a computer system with a processor, chipset, BIOS, virtual machine monitor (VMM) and for some uses, certain platform software, enabled for it. Functionality, performance or other benefit will vary depending on hardware and software configurations.

\* Enabling Execute Disable Bit functionality requires a PC with a processor with Execute Disable Bit capability and a supporting operating system. Check with your PC manufacturer on whether your system delivers Execute Disable Bit functionality.

Φ Intel® EM64T requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel EM64T. Processor will not operate (including 32-bit operation) without an Intel EM64T-enabled BIOS. Performance will vary depending on your hardware and software configurations.

# Intel® 975X Express Chipset

Feature	Details	Benefit
FSB Speed	1066/800MHz	Supports Intel® Pentium® processor Extreme Edition, for outstanding performance for advanced games and applications with up to four thread capabilities
ECC memory support	Yes	Protects and ensures data integrity
Intel® Memory Pipeline Technology	Yes	Enables a higher utilization of each memory channel, accelerating data transfers between the processor and system memory, resulting in higher system performance
Memory Type	DDR2-667, 533 Max 8GB	Flexible memory support for dual-channel DDR2 667/DDR2 533 delivers a more responsive system, with RAM configurations up to 8 GB
Discrete Graphics	PCE Express* 1x16 or 2x8	Designed for bandwidth-intensive applications to enable realistic textures, graphics, and smooth video. Supports dual-graphics for even higher level of performance for demanding games and applications
Intel® High Definition Audio	Yes	Enables increased home theater quality audio, support for multiple audio streams
Intel® Matrix Storage Technology (RAID 0, 1, 5, 10)	Yes	Can boost storage performance while helping to protect digital content
Intel® Active Management Technology*	Yes	Enables down-the-wire (remote) management of networked clients regardless of system state to improve IT efficiency, system availability and asset management



\*Intel Active Management Technology requires the platform to have an Intel AMT-enabled chipset, network hardware and software. The platform must also be connected to a power source and an active LAN port.

# Intel® 975X Express Chipsets



## Key Messages

1. With multiple PCI Express controllers to support a **flexible I/O**, the Intel® 975X Express Chipset enables dual x8 or single x16 graphics configurations for exceptional graphics performance
2. The Intel® 975X Express Chipset offers **technical flexibility** to support the highest performance processor settings\*
3. The Intel® 975X Express Chipset is optimized for the **Intel® Pentium® processor Extreme Edition**, with intelligence to help manage and prioritize four threads received from the processor.
4. Integrated audio support enables premium home theater sound and delivers advanced features such as multiple audio streams and jack re-tasking with **Intel® High Definition Audio**
5. Get quicker access to digital photo, video and business files with RAID 0, 5 and 10, and data protection against loss from a hard disk drive failure with RAID 1, 5 and 10 with **Intel® Matrix Storage Technology**
6. **The Dolby PCEE program<sup>1</sup>** brings additional sound experience to chipsets with Intel HD Audio